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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/954,950	09/18/2001	Pramod B. Mahajan	35718/238971 (5718-142)	8514

826 7590 07/30/2003

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EXAMINER	
KRUSE, DAVID H	

ART UNIT	PAPER NUMBER
1638	8

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

File copy

Office Action Summary	Application No.	Applicant(s)	
	09/954,950	MAHAJAN, PRAMOD B.	
	Examiner	Art Unit	
	David H Kruse	1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 May 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) *7-9,12,17,18,21,22,24-26 and 29* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,10,11,13-16,19,20,23,27 and 28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 September 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5* .
4)☐ Interview Summary (PTO-413) Paper No(s). _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 1-6, 10, 11, 13-16, 19, 20, 23, 27 and 28 in Paper No. 7, filed 19 May 2003, is acknowledged.

Applicant's arguments regarding the restriction of Groups III and V are not relevant to the election because they do not traverse the restriction of Group I specifically (pages1-2 of the response).

2. Claims 7-9, 12, 13, 17, 18, 21, 22, 24-26 and 29 are withdrawn from further consideration pursuant to 37 CFR § 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 7.

3. This application contains claims 7-9, 12, 13, 17, 18, 21, 22, 24-26 and 29 drawn to an invention nonelected with traverse in Paper No. 7. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR § 1.144). See MPEP § 821.01.

Information Disclosure Statement

4. The information disclosure statement filed 26 August 2002 has been considered, a signed copy is attached hereto.

Drawings

5. The drawings are objected to in this application because in Figure 2, the signature sequence shown in bold is unclear and difficult to distinguish. The Examiner does not object to Figures 1, 3 and 4. Applicant may obviate this objection by amending

the description of Figure 2 on page 5 of the specification to denote which sequence is highlighted in bold as amino acids "X-Y". Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Specification

6. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code at page 15, line 21. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

Claim Objections

7. Claims 14, 15 and 23 are objected to because of the following informalities: Claims 14, 15 and 23 are dependent upon claims directed to a non-elected invention. Appropriate correction is required.

Claim Rejections - 35 USC § 101

8. 35 U.S.C. § 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9. Claims 1-6, 10, 11, 13-16, 19, 20, 23, 27 and 28 are rejected under 35 U.S.C. § 101 because the claimed invention is not supported by either a substantial asserted utility or a well-established utility.

Applicant claims an isolated nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of: (a) the nucleotide sequence shown in SEQ ID NO:1; (b) a nucleotide sequence that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO:2; (c) a nucleotide sequence encoding an MLH1 polypeptide, wherein said nucleotide sequence hybridizes to the nucleotide sequence shown in SEQ ID NO:1 under stringent conditions; (d) the cDNA insert of the plasmid deposited with ATCC as Patent Deposit No. PTA-2021; (e) a nucleotide sequence encoding an MLH1 polypeptide, wherein said nucleotide sequence hybridizes to the cDNA insert of the plasmid deposited with ATCC as Patent Deposit No. PTA-2021 under stringent conditions; (9 a nucleotide sequence encoding an MLH1 polypeptide, said sequence having at least about 75% sequence identity to the nucleotide sequence shown in SEQ ID NO:1; (g) a nucleotide sequence encoding an MLHI polypeptide having at least about 75% sequence identity to the polypeptide encoded by the cDNA insert of the plasmid deposited with ATCC as Patent Deposit No. PTA-2021; (h) a nucleotide sequence encoding an MLH1 polypeptide having at least about 75% sequence identity to the polypeptide sequence shown in SEQ ID N0:2, and antisense thereof. Applicant also claims transgenic organisms and plants comprising said isolated nucleic acid and methods of using said isolated nucleic acid comprising transforming plants.

Applicant asserts that SEQ ID NO: 1, which encodes the polypeptide sequence of SEQ ID NO: 2, encodes a MLH1 polypeptide involved in mismatch repair in rice. Applicant's assertion is based on sequence identity of the encoded polypeptide to the

putative AtMLH1 of *Arabidopsis thaliana* (paragraph spanning pages 18-19 of the specification). Applicant cites Jean *et al* 1999 (Mol. Gen. Genet 262: 633-642) in the paragraph spanning pages 2-3 of the specification. Jean *et al* states that despite the obvious similarities between *AtMLH1* and its counter parts in other eukaryotes, definite proof that *AtMLH1* plays a role in MMR (mismatch repair) in *Arabidopsis* can only be obtained through mutant analysis (page 641, 2nd paragraph). Applicant provides no such mutant analysis for the claimed nucleic acid molecule encoding an MLH1 polypeptide, and the examples in the specification appear prophetic. Hence, it is unclear from Applicant's specification that there is a substantial or well-established utility to the claimed invention.

See *Brenner v. Manson*, 383 U.S. 519 (1966), which states "The basic quid pro quo contemplated by the Constitution and the Congress for granting a patent monopoly is the benefit derived by the public from an invention with substantial utility. Unless and until a process is refined and developed to this point--where specific benefit exists in currently available form--there is insufficient justification for permitting an applicant to engross what may prove to be a broad field."

Claim Rejections - 35 USC § 112

10. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-6, 10, 11, 13-16, 19, 20, 23, 27 and 28 are also rejected under 35 U.S.C. § 112, first paragraph. Specifically, since the claimed invention is not supported

by either a substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

What Applicant claims is outlined above. In addition, Applicant claims an expression cassette and a transformed plant comprising said isolated nucleic acid. Applicant also claims a method for increasing the efficiency of targeted gene mutation or homologous recombination in a transformed plant comprising said isolated nucleic acid.

In re Wands, 858F.2d 731, 8 USPQ2d 1400 (Fed. Cir. 1988) lists eight considerations for determining whether or not undue experimentation would be necessary to practice an invention. These factors are: the quantity of experimentation necessary, the amount of direction or guidance presented, the presence or absence of working examples of the invention, the nature of the invention, the state of the prior art, the relative skill of those in the art, the predictability or unpredictability of the art, and the breadth of the claims.

As stated above, Jean *et al* (1999) teaches that one of skill in the art can only obtain definitive proof that a polypeptide, and hence the nucleic acid that encodes it, plays a role in mismatch repair in a plant by mutation analysis. Jean *et al* (1999) teaches that one of skill in the art cannot presume that just based on sequence similarity, that a polypeptide has a specific function, in the case of MLH1 polypeptides, because such a structural-functional relationship had not been established by the art at the time of Applicant's invention. Applicant provides no evidence of function of the

polypeptide encoded by SEQ ID NO: 1, thus Applicant fails to teach how to make and use the invention as broadly claimed. Given the unpredictability of the art the breadth of the claimed invention and the teachings of Applicant, it would have required undue trial and error experimentation by one of skill in the art at the time of Applicant's invention to definitively establish that the polypeptide encoded by SEQ ID NO: 1 is a MLH1 polypeptide and is involved in mismatch repair in rice.

As directed to a nucleic acid having nucleotide sequences that hybridize to the nucleotide sequence shown in SEQ ID NO: 1 under stringent conditions or to the cDNA insert of the plasmid deposit PTA-2021, or that has at least about 75% sequence identity to SEQ ID NO: 1 or that encodes a polypeptide that has at least about 75% sequence identity to SEQ ID NO: 2, Applicant has provides no guidance on how to make and use such isolated nucleic acids without undue trial and error experimentation, given the teachings of the art as outlined supra. In addition, at claims 4 and 5, Applicant does not teach how to use the claimed nucleic acid fragments or nucleic acids that encode a fragment of the amino acid sequence in SEQ ID NO: 2 as broadly claimed.

11. Claims 1-6, 10, 11, 13-16, 19, 20, 23, 27 and 28 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

What Applicant claims is outlined above. In addition, Applicant claims an expression cassette and a transformed plant comprising said isolated nucleic acid.

Applicant also claims a method for increasing the efficiency of targeted gene mutation or homologous recombination in a transformed plant comprising said isolated nucleic acid.

Applicant describes an isolated nucleic acid having the nucleotide sequence described in SEQ ID NO: 1 that encodes a polypeptide having the amino acid sequence describe in SEQ ID NO: 2. Applicant asserts that SEQ ID NO: 2 describes a rice MLH1 polypeptide involved in mismatch repair.

Applicant does not describe the actual function of said polypeptide, applicant only asserts said function based on amino acid sequence similarity to the AtMLH1 protein described by Jean *et al* (1999) as outlined above.

Hence, it is unclear form the instant specification that Applicant was in possession of the invention as broadly claimed.

See, MPEP § 2163 which states that the claimed invention as a whole may not be adequately described where an invention is described solely in terms of a method of its making coupled with its function and there is no described or art-recognized correlation or relationship between the structure of the invention and its function. A biomolecule sequence described only by a functional characteristic, without any known or disclosed correlation between that function and the structure of the sequence, normally is not a sufficient identifying characteristic for written description purposes, even when accompanied by a method of obtaining the claimed sequence.

12. Claims 1-3, 6, 10, 11, 13-16, 19, 20, 23, 27 and 28 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

At claims 1, 10, 11, 13, 19, 20 and 27, the limitation "hybridizes...under stringent conditions" renders the claims indefinite because the specification only give general guidance for "stringent conditions" on pages 12 and 13, hence the metes and bounds of the claimed invention are unclear. Claims 2, 3, 14, 15, 16, 23 and 28 are also indefinite because said claims do not obviate the indefiniteness of the claim(s) upon which they depend.

Claim 6 is indefinite because "any one of the nucleic acid molecules of Claims 1, 4 or 5" does not teach the metes and bounds of the claimed invention. In the instant case each independent claim is directed to an isolated nucleic acid molecule, define in multiple ways, and not a multitude of nucleic acid molecules. Amending the claim to read -- the isolated nucleic acid molecule of claim 1, 4 or 5 -- would obviate this rejection.

Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The phrase "a hybrid plant species" in claim **23**, line 4, is used by the claim to denote "a hybrid plant species", while the accepted interpretation of the product of the

claimed method is "a transgenic plant." The phrase is indefinite because the specification does not clearly redefine the limitation. Applicant's reference to U.S. Patent No. 5,965,415 on page 29, last paragraph, in the specification is not deemed to define the phrase because said patent is directed to a method of making "hybrid organisms" by cell fusion and not by the introduction of isolated nucleic acids.

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claim 1-3 and 6 are rejected under 35 U.S.C. § 102(b) as being anticipated by Prolla *et al* (1994, Science 265: 1091-1093).

The indefiniteness of "hybridizes...under stringent conditions" at claim 1 is discussed above.

Prolla *et al* disclose an isolated nucleic acid molecule that encodes an MLH1 polypeptide that would hybridize under stringent conditions to a nucleic acid molecule having the nucleotide sequence of SEQ ID NO: 1 (see page 1093, left column, item 19). Prolla *et al* disclose an expression cassette comprising an isolated nucleic acid that encodes said MLH1 polypeptide operably linked to a promoter and a host cell engineered to express said nucleic acid molecule. The promoter used by Prolla *et al* was constitutive, the limitation at claim 2 of "that drives expression in a plant cell" is considered an intended use limitation that does not distinguish the claimed invention of

that disclosed by the prior art. Hence, Prolla *et al* have previously disclosed all of the claim limitations.

Conclusion

15. Claims 4, 5, 10, 11, 13-16, 19, 20, 23, 27 and 28 are free of the prior art, which neither teaches nor suggests a plant transformed with a nucleic acid that encodes a MLH1 protein or method of using said transformed plant.

16. No claims are allowed.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David H. Kruse, Ph.D. whose telephone number is (703) 306-4539. The examiner can normally be reached on Monday to Friday from 8:00 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Amy Nelson can be reached at (703) 306-3218. The fax telephone number for this Group is (703) 872-9306 Before Final or (703) 872-9307 After Final.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group Receptionist whose telephone number is (703) 308-0196.

David H. Kruse, Ph.D.
28 July 2003